WHAT IS CLAIMED IS:

1. 1. A method of operating a wireless communications device, comprising:
2. maintaining a first set of queue information indicating for each of a plurality of different
3. transmission priority levels a number of data units to be transmitted; and
4. periodically generating a group of transmission requests over time as a function of said
5. maintained queue information, said group of transmission requests including:
6. a first transmission request specifying an absolute number of data units to be transmitted
7. for a first one of said plurality of different transmission priority levels.

1. 2. The method of claim 1, wherein said group of transmission requests further includes:
2. a second transmission request.

1. 3. The method of claim 2, wherein said first transmission request is located at a pre-selected
2. position within said group of requests, said step of generating said group of requests including:
3. incorporating in the first request, as said absolute number, a number of data units to be
4. transmitted corresponding to the highest transmission priority level having a non-zero number of
5. data units to be transmitted, as indicated by said set of queue information.

1. 4. The method of claim 3, wherein generating said group of requests includes:
2. incorporating a second number of data units to be transmitted corresponding to another
3. transmission priority level, into said first transmission request.

1. 5. The method of claim 2, further comprising:
2. maintaining a second set of queue information indicating for each of said plurality of
3. different transmission priority levels an estimate of a base station's estimate of the first set of
4. queue information maintained by said wireless communications device.

1. 6. The method of claim 2, wherein said second transmission request includes a relative
2. value indicating a relative number of data units corresponding to one of said plurality of priority
3. levels to be transmitted.

1   7.   The method of claim 6, wherein said relative value is relative to an estimate of a base

2   station estimate of a value in the first queue information maintained by said wireless

3   communications device.

1   8.   The method of claim 5, wherein said second transmission request includes a relative

2   value indicating a relative number of data units corresponding to one of said plurality of priority

3   levels to be transmitted.

1   9.   The method of claim 8, wherein said relative value is generated as a function of a

2   difference between the number of data units in the first and second queues correspond to said

3   one of said priority levels.

1   10.   The method of claim 9,

2   wherein said absolute value is generated using a first quantization table; and

3   wherein said relative value is generated using a different quantization table including a

4   different number of quantization levels than said first table.

1   11.   The method of claim 5, wherein said wireless terminal determines the priority level for

2   which said data unit information is to be included in at least one of said first and second requests

3   as a function of values included in both said first and second queues.

1   12.   The method of claim 6, wherein said group of requests includes more requests including

2   relative values than requests including absolute numbers of data units to be transmitted for one

3   of said plurality of different transmission priority levels.

1   13.   The method of claim 1, wherein the first and second requests include different numbers

2   of bits, the first request including at least twice the number of bits as the second request

3   message.

1   14.   The method of claim 1, wherein each group of requests includes at least three requests,

2   the method further comprising:

3   transmitting each group of requests in a time period less than 98 milli-seconds in

4   duration.

1   15.   The method of claim 1, further comprising:

2   transmitting said first transmission request to a base station at a first point in time;

3   discarding data corresponding to said first one of said plurality of different transmission

4   priority levels prior to receiving a signal indicating that said first transmission request was

5   granted;

6   updating said first set of queue information to reflect the discarding of data

7   corresponding to the first one of said plurality of different transmission priority levels; and

8   transmitting said second transmission request at a second point in time, said second point

9   in time following said updating of said first set of queue information to reflect the discarding of

10   data.

1   16.   A wireless communications device, comprising:

2   a first set of queue information indicating for each of a plurality of different transmission

3   priority levels a number of data units to be transmitted; and

4   means for periodically generating a group of transmission requests over time as a

5   function of said maintained queue information, said group of transmission requests including:

6   i) a first transmission request specifying an absolute number of data units to be

7   transmitted for a first one of said plurality of different transmission priority levels; and

8   ii) a second transmission request.

1   17.   The device of claim 16, wherein said first transmission request is located at a pre-

2   selected position within said group of requests, said means for generating a group of

3   transmission requests including:

4   means for incorporating in the first request, as said absolute number, the number of data

5   units to be transmitted corresponding to the highest transmission priority level having a non-zero

6   number of data units to be transmitted as indicated by said set of queue information.

1   18.   The device of claim 16, wherein said means for generating said group of requests further

2   includes:

3   means for incorporating a second number of data units to be transmitted corresponding to

4   another transmission priority level into said first transmission request.

1   19.   The device of claim 16, further comprising:

41

2   a second set of queue information indicating for each of said plurality of different

3   transmission priority levels an estimate of a base station's estimate of the first set of queue

4   information maintained by said wireless communications device.

1   20.   The device of claim 19, further comprising:

2   memory for storing said first and second transmission requests prior to transmission, said

3   second transmission request including a relative value indicating a relative number of data units

4   corresponding to one of said plurality of priority levels to be transmitted.

1   21.   The device of claim 20, wherein said relative value is relative to a number of data units

2   in said second set of queue information corresponding said one of said plurality of priority

3   levels.

1   22.   The device of claim 19, further comprising:

2   memory for storing said second transmission request, said second transmission request

3   including a relative value indicating a relative number of data units corresponding to one of said

4   plurality of priority levels to be transmitted.

1   23.   The device of claim 22, wherein said means for generating a group of requests generates

2   said relative value as a function of a difference between the number of data units in the first and

3   second queues correspond to said one of said priority levels.

1   24.   The device of claim 23, further comprising

2   a first quantization table used to generate said absolute value; and

3   a second quantization table including a different number of quantization levels than said

4   first table, said second quantization table being used to generate said relative value.

1   25.   The device of claim 19, wherein said wireless terminal includes means for determining

2   the priority level for which said data unit information is to be included in one of said first and

3   second requests as a function of the values included in both said first and second queues.

1   26.   The device of claim 20, wherein said group of requests includes more requests including

2   relative values requests including absolute values.

1 27.   The device of claim 16, wherein the first and second requests include different numbers
2   of bits, the first request including at least twice the number of bits as the second request
3   message.

1 28.   A method of operating a base station to allocate uplink channel communications
2   resources in a multiple access system where multiple wireless terminals can request uplink
3   channel communication resources from said base station, the method comprising;
4   maintaining a set of queue information indicating, for each wireless terminal requesting
5   data units which have not yet been allocated as requested, the requested number of data units for
6   each priority level for which an unsatisfied data unit request was received;
7   monitoring to receive uplink channel resource requests from any one of said wireless
8   terminals;
9   in response to a received resource allocation request including at least one of an absolute
10   number of requested data units and a relative number of requested data units corresponding to
11   one of said transmission priority levels,
12   i) performing a queue information update operation; and
13   ii) allocating uplink channel resources as a function of the updated queue information.

1 29.   The method of claim 28, wherein updating said queue information includes generating
2   updated requested numbers of data units for said plurality of priority levels as a function of L
3   most recent assignments made by said base station where L is a known value at the time said
4   request is received, L being a positive integer.

1 30.   The method of claim 29, wherein said step of generating updated requested numbers of
2   data units as a function of the most recent L assignments includes accessing memory storing
3   assignment information as a vector including a mobile node identifier, a plurality of priority
4   levels and, for each priority level, an assigned number of data units.

1 31.   The method of claim 29, wherein updating said queue information includes replacing a
2   number of data units, corresponding to one of said priority levels, in said set of queue
3   information with a requested number of data units corresponding to said one of said priority
4   levels, said requested number of data units being an absolute value communicated by said
5   received request.

43

1   32.   The method of claim 31, further comprising:

2   setting the numbers of data units corresponding to priority levels which have a higher

3   priority than said one of said priority levels to zero.

1   33.   The method of claim 29, wherein updating said queue information includes adding to the

2   number of data units corresponding to one of said priority levels in said set of queue information

3   with the requested number of data units specified in the received request.

1   34.   The method of claim 29, wherein updating said queue information includes

2   subtracting at least some numbers of assigned data units in the L assignments to values included

3   in said set of queue information.

1   35.   The method of claim 29, wherein updating said queue information includes

2   adding at least some numbers of assigned data units in the L assignments to values included in

3   said set of queue information.

1   36.   A base station for allocating uplink channel communications resources in a multiple

2   access system where multiple wireless terminals can request uplink channel communication

3   resources from said base station, the base station comprising;

4   a set of queue information indicating, for each wireless terminal requesting data units

5   which have not yet been allocated as requested, the requested number of data units for each

6   priority level for which an unsatisfied data unit request was received;

7   a receiver for receiving uplink channel resource requests from any one of said wireless

8   terminals;

9   a module for performing a queue information update operation in response to a received

10   resource allocation request including at least one of an absolute number of requested data units

11   and a relative number of requested data units corresponding to one of said transmission priority

12   levels; and

13   means for allocating uplink channel resources as a function of the updated queue

14   information and said received resource allocation request.

1   37.   The base station of claim 36, wherein said module for performing a queue information

2   update operation includes:

3   means for generating updated requested numbers of data units for said plurality of

4   priority levels as a function of L most recent assignments made by said base station where L is a

5   known value at the time said request is received.

1   38.   The base station of claim 37, wherein said module for performing a queue update

2   operation further includes:

3   means for replacing a requested number of data units, corresponding to one of said

4   priority levels, in said set of queue information with a requested number of data units

5   corresponding to said one of said priority levels, said requested number of data units being an

6   absolute value communicated by said received request.

1   39.   The base station of claim 38, wherein said module for performing a queue update

2   operation further includes:

3   means for setting requested numbers of data units corresponding to priority levels which

4   have a higher priority than said one of said priority levels to zero.

1   40.   The base station of claim 37, wherein said module for performing a queue update

2   operation further includes:

3   means of adding a requested number of data units corresponding to one of said priority

4   levels in said set of queue information with a requested number of data units specified in the

5   received request.